In the claims

1. (Currently Amended) Imaging apparatus, comprising:

a first device which ~~, for~~ obtain~~s~~ing a first image, by a first modality, said image being an ionizing radiation image~~selected from the group consisting of SPECT, PET, CT, an extracorporeal gamma scan, an extracorporeal beta scan, x-rays, an intracorporeal gamma scan, an intracorporeal beta scan, an intravascular gamma scan, an intravascular beta scan, and a combination thereof~~, wherein said first image is registered to a system of coordinates;

a second device~~, for~~ which obtain~~s~~ing a second, structural image, by a second modality, said structural image being an ultrasonic image~~selected from the group consisting of a three-dimensional ultrasound, an MRI operative by an internal magnetic field, an extracorporeal ultrasound, an extracorporeal MRI operative by an external magnetic field, an intracorporeal ultrasound, an intracorporeal MRI operative by an external magnetic field, an intravascular ultrasound, and a combination thereof~~; and

a computerized system, which comprises:

_____-a registrator for co-registering said second, structural image to said system of coordinates, and

_____an attenuation-instruction generator configured to compute a set of attenuation instructions for said first image, based at least on non-uniformities in said second, structural image.

2. (Original) The imaging apparatus of claim 1, wherein said computerized system is further configured to compute, based on said a set of attenuation instructions an attenuation-corrected image of said first image.

3. (Original) The imaging apparatus of claim 2, wherein said computerized system is further configured to display a superposition of said attenuation-corrected first image and said second, structural image.

4. (Original) The imaging apparatus of claim 3, wherein said apparatus further includes an instrument, registered to said system of coordinates and visible on at least one of said first image and said second, structural image, and wherein said computerized system is further configured to guide said instrument in-vivo, based on said superposition.

5. (Original) The imaging apparatus of claim 1, wherein said registrator for co-registering said second, structural image to said system of coordinates relies on that said first and second devices share a single position-registration device, for co-registering said second, structural image to said system of coordinates.

6. (Original) The imaging apparatus of claim 1, wherein said registrator for co-registering said second, structural image to said system of coordinates relies on that said first and second devices have substantially equal position-registration devices, for co-registering said second, structural image to said system of coordinates.

7. (Original) The imaging apparatus of claim 1, wherein said registrator for co-registering said second, structural image to said system of coordinates relies on fiduciary marks visible both on said first image and on said second, structural image, for co-registering said second, structural image to said system of coordinates.

8-14. (Canceled)

15. (Currently Amended) The imaging apparatus of claim ~~8~~1, further comprising an ultrasound transducer operative for focused ablation.

16. (Currently Amended) The imaging apparatus of claim ~~8~~1, designed as a rectum probe.

17. (Currently Amended) The imaging apparatus of claim ~~8~~1, designed as an endoscope probe.

18. (Currently Amended) The imaging apparatus of claim ~~8~~1, designed to be inserted through a trucar valve.

19. (Currently Amended) The imaging apparatus of claim 1~~8~~, designed to be mounted on a resectoscope.

20. (Currently Amended) The imaging apparatus of claim 1~~8~~, designed to be inserted in a catheter.

21. (Currently Amended) The imaging apparatus of claim ~~8~~1, designed for intravascular imaging.

22. (Currently Amended) The imaging apparatus of claim ~~8~~1, designed as a handheld, extracorporeal probe.

23. (Currently Amended) An imaging apparatus according to claim 1, arranged as an intrabody ~~rectal~~ probe, comprising ~~:~~

an intracorporeal portion, which portion comprises said first device and said second device.~~:~~

~~a first detector, for obtaining a first image, by a first modality, selected from the group consisting of a gamma scan, a beta scan, and a combination thereof, wherein said first image is registered to a system of coordinates; and~~

~~a second detector, for obtaining a second, structural image, by a second modality, selected from the group consisting of a ultrasound, MRI, and a combination thereof; and~~

~~a computerized system, which comprises a registrator for co-registering said second, structural image to said system of coordinates, and an attenuation instruction generator configured to compute a set of attenuation instructions for said first image, based on said second, structural image.~~

24. (Currently Amended) The imaging apparatus ~~rectal probe~~ of claim 23, further comprising movable collimators, operative as vents.

25. (Currently Amended) The imaging apparatus ~~rectal probe~~ of claim 23, comprising a ~~wherein said~~ motor which further includes motion and position registration in a linear direction into the rectum.

26. (Currently Amended) The imaging apparatus ~~rectal probe~~ of claim 23, further comprising an ultrasound transducer, adapted for focused ablation.

27. (Currently Amended) An imaging method, comprising:

imaging by a first modality, a first image, by ionizing radiation~~selected from the group consisting of SPECT, PET, CT, an extracorporeal gamma scan, an extracorporeal beta scan, x-rays, an intracorporeal gamma scan, an intracorporeal beta scan, an intravascular gamma scan, an intravascular beta scan, and a combination thereof, wherein said first image is registered to a system of coordinates~~;

imaging by a second modality, ~~a second device, for obtaining~~ a second, structural image, said structural image being an ultrasonic image~~by a second modality, selected from the group consisting of a three-dimensional ultrasound, an MRI operative by an internal magnetic field, an extracorporeal ultrasound, an extracorporeal MRI operative by an external magnetic field, an intracorporeal ultrasound, an intracorporeal MRI operative by an external magnetic field, an intravascular ultrasound, and a combination thereof~~;

~~co-registering said second, structural image to said system of coordinates;~~ and

computing a set of attenuation instructions for said first image, based at least on non-uniformities in said second, structural image.

28. (Original) The imaging method of claim 27, further comprising, based on said a set of attenuation instructions, computing an attenuation-corrected first image.

29. (Currently Amended) The imaging method of claim 28, further comprising displaying ~~an~~ said attenuation-corrected first image.

30. (Original) The imaging method of claim 28, further comprising superimposing said attenuation-corrected first image and a second, structural image of said second, structural imaging modality.

31. (Original) The imaging method of claim 30, further comprising guiding an instrument based on the superposition of said attenuation-corrected first image and said second, structural image.

32. (Original) The imaging method of claim 30, further comprising performing focused ablation, based on the superposition of said attenuation-corrected first image and said second, structural image.

33. (Withdrawn) A probe comprising:

a nuclear-radiation detector of a non-parallel collimation; and

an ultrasound detector.

34. (Withdrawn) The probe of claim 33, wherein said non-parallel collimation is a single-collimator collimation.

35. (Withdrawn) The probe of claim 33, wherein said non-parallel collimation is a wide-angle collimation.

36. (Withdrawn) The probe of claim 33, wherein said non-parallel collimation is a narrow-angle collimation.

37. (Withdrawn) The probe of claim 33, wherein said non-parallel collimation is no collimation.

38. (Withdrawn) The probe of claim 33, adapted to be handheld.

39. (Withdrawn) The probe of claim 33, adapted for endoscopy.

40. (Withdrawn) A probe comprising:

a nuclear-radiation detector; and

an MRI detector, having an external magnetic field.

41. (Withdrawn) The probe of claim 40, adapted to be handheld.

42. (Withdrawn) The probe of claim 40, adapted for endoscopy.

43. (Withdrawn) An imaging method, comprising:

performing intravascular nuclear-radiation imaging;

performing intravascular ultrasound; and

co-registering the nuclear-radiation and the ultrasound images to a system of coordinates.

44. (Withdrawn) The imaging method of claim 43, comprising correcting the nuclear-radiation image for attenuation, based on the ultrasound image.

45. (Withdrawn) The imaging method of claim 44, comprising superimposing the corrected nuclear-radiation image and the ultrasound image.

46. (New) Imaging apparatus according to claim 1, wherein said first modality is selected from a group consisting of SPECT, PET, CT, an extracorporeal gamma scan, an extracorporeal beta scan, x-rays, an intracorporeal gamma scan, an intracorporeal beta scan, an intravascular gamma scan, an intravascular beta scan, and a combination thereof.

47. (New) Imaging apparatus according to claim 1, wherein said first modality is selected from the group consisting of a gamma scan, a beta scan, and a combination thereof.

48. (New) A method according to claim 27, wherein said first modality is selected from a group consisting of SPECT, PET, CT, an extracorporeal gamma scan,

an extracorporeal beta scan, x-rays, an intracorporeal gamma scan, an intracorporeal beta scan, an intravascular gamma scan, an intravascular beta scan, and a combination thereof.

49. (New) Imaging apparatus according to claim 1, wherein said generator generates said attenuation instructions based on an identification of boundaries between tissues in said structural image.

50. (New) Imaging apparatus according to claim 1, wherein said generator generates said attenuation instructions based on a characterization of tissues in said image according to tissue types.

51. (New) Imaging apparatus according to claim 1, wherein said generator generates said attenuation instructions based on a 3D structural image.

52. (New) Imaging apparatus according to claim 1, wherein said first device and said second device are mounted on an elongate element and occupy different axial locations.

53. (New) A method of reconstructing a 3D radiation image, comprising:

(a) collecting ionizing radiation that exits from a tissue;

(b) imaging said tissue using non-ionizing radiation;

(c) identifying tissue boundaries in said non-ionizing radiation image; and

(d) reconstructing an ionizing radiation image from said collected radiation using said tissue boundary identifications.

54. (New) A method according to claim 53, wherein collecting and imaging comprises contacting an imaging probe against a body.